

WHAT IS CLAIMED IS:

1. An apparatus for supplying a visualizing agent to a latent image to thereby form an image, comprising:
a visualizing agent formed of a mixture of a resin
5 material and magnetic particles, the ratio of the
magnetic particles to the resin material being
predetermined, magnetic particles of a same material as
the first-mentioned magnetic particles being attached
to a surface of the mixture;
- 10 a recording-medium conveyance mechanism which can
convey a recording medium which holds thereon the
visualizing agent stuck to selected portions of a
latent image carrier;
- a first voltage supply unit which can output a
15 first voltage to charge the latent image carrier with a
predetermined potential, and also which can output a
second voltage, differing from the first voltage, to
charge the latent image carrier with another
predetermined potential;
- 20 a second voltage supply unit which can output a
third voltage, differing from the first and second
voltages, to attach the visualizing agent to the
selected portions of the latent image carrier; and
a collecting unit which can collect the attached
25 magnetic particles when the magnetic particles are
separated from the visualizing agent attached on the
latent image carrier by a difference between the third

TOKUYA SHIBATA 2650

voltage supplied from the second voltage supply unit and the second voltage supplied from the first voltage supply unit.

2. The apparatus according to claim 1, wherein
5 the first voltage supply unit can output the second voltage only during a predetermined time period in which the recording medium is not conveyed by the recording-medium conveyance mechanism.

3. The apparatus according to claim 1, wherein
10 when the first voltage supply unit has output the second voltage, a difference between the third voltage supplied from the second voltage supply unit and the first voltage supplied from the first voltage supply unit is increased.

15 4. The apparatus according to claim 2, wherein when the first voltage supply unit has output the second voltage, the collecting unit collects the magnetic particles separated from the visualizing agent and attached to the latent image carrier.

20 5. The apparatus according to claim 3, wherein when the first voltage supply unit has output the second voltage, the collecting unit collects the magnetic particles separated from the visualizing agent and attached to the latent image carrier.

25 6. The apparatus according to claim 4, further comprising a visualizing-agent transfer mechanism which can supply a fourth voltage, differing from the first

to third voltages, to the latent image carrier and the visualizing agent attached to the latent image carrier, thereby transferring the visualizing agent attached to the latent image carrier, onto the recording medium
5 conveyed by the recording-medium conveyance mechanism.

7. The apparatus according to claim 6, wherein the visualizing-agent transfer mechanism has a volume capable of containing the magnetic particles separated from the visualizing agent.

10 8. An image forming apparatus comprising:

a photosensitive unit which can hold, as a latent image, a potential difference between an exposed portion thereof which is irradiated with light, and a non-exposed portion thereof which is not irradiated
15 with light, when light has been emitted onto the photosensitive unit charged with a predetermined potential;

20 a charger unit which can output a first voltage used to supply a predetermined surface potential to the photosensitive unit, and also output a second voltage differing from the first voltage;

25 an exposure unit which can emit light onto the photosensitive unit supplied with the predetermined surface potential from the charger unit, the light having its intensity varied in accordance with image data;

a developing unit including a sleeve opposed to

the photosensitive unit with a predetermined space
defined therebetween, the developing unit supplying the
surface of the photosensitive unit with toner, thereby
developing the latent image held on the photosensitive
5 unit, the toner being formed of a resin material
containing magnetic particles, the ratio of the
magnetic particles to the resin material being
predetermined, magnetic particles of a same material as
the first-mentioned magnetic particles being attached
10 to a surface of the toner;

15 a recording-medium conveyance mechanism which can
convey, to the photosensitive unit, a recording medium
which can electrostatically hold the toner supplied by
the developing unit to the latent image on the
photosensitive unit;

20 a transfer unit which can electrostatically
transfer the toner supplied by the developing unit to
the latent image on the photosensitive unit, onto the
recording medium conveyed to the photosensitive unit by
the recording-medium conveyance mechanism;

a recording-medium discharge mechanism which can
convey, to a predetermined position, the recording
medium with the toner electrostatically transferred by
the transfer unit from the photosensitive unit;

25 a developing-bias-voltage supply unit which can
supply the sleeve of the developing unit with a third
voltage that differs by a predetermined potential from

the first voltage applied to the photosensitive unit by the charger unit;

a voltage control circuit which can change a voltage, applied by the charger unit to the photosensitive unit, from the first voltage to the second voltage for a predetermined time period in which no toner is electrostatically transferred by the transfer unit onto the recording medium conveyed by the recording-medium conveyance mechanism, so as to set a difference between the second voltage and the third voltage applied to the sleeve of the developing unit by the developing-bias-voltage supply unit, larger than a difference between the first and third voltages; and
a collecting unit which can collect the magnetic particles separated from the toner and existing on the photosensitive unit.

9. The image forming apparatus according to claim 8, wherein when an instruction to form an image on two or more members of the recording medium has been issued, a time, at which the voltage control circuit can change the voltage, applied by the charger unit to the photosensitive unit, from the first voltage to the second voltage so as to set the difference between the second voltage and the third voltage larger than the difference between the first and third voltages, is a time during an interval between a time at which one member of the recording medium is conveyed and a time

2025041419560

at which a subsequent member of the recording medium is conveyed, or before any one of the recording medium reaches the transfer region in which the transfer unit is opposed to the photosensitive unit, or before the
5 rotation of the photosensitive unit is stopped after said any one of the recording medium passes through the transfer region, and when an instruction to form an image only on one member of the recording medium has been issued, the time, at which the voltage control
10 circuit can change the voltage, is before the recording medium reaches the transfer region, or before the rotation of the photosensitive unit is stopped after the recording medium passes through the transfer region.

15 10. The image forming apparatus according to claim 8, wherein the transfer unit supplies the photosensitive unit and the toner attached to the photosensitive unit with a fourth voltage differing from the first to third voltages, thereby transferring
20 the toner attached to the photosensitive unit, onto the recording medium conveyed by the recording-medium conveyance mechanism.

25 11. The image forming apparatus according to claim 10, wherein the transfer unit has a volume capable of containing the magnetic particles separated from the toner.

12. An image forming method of supplying a

visualizing agent onto a latent image to form an image,
comprising:

forming a latent image on an optical semiconductor
by emitting light selected portions of the optical
5 semiconductor with a predetermined potential applied to
the optical
semiconductor;

supplying toner to the latent image formed on the
optical semiconductor, while applying a predetermined
10 bias voltage to the optical semiconductor; and

collecting, in a predetermined time period in
which a recording medium does not exist in a transfer
region defined between the optical semiconductor and a
transfer unit, other than when the toner is being
15 transferred onto the recording medium, magnetic
particles separated from the toner attached to the
optical semiconductor, into a predetermined collecting
section, by increasing the potential of the optical
semiconductor, so as to set a difference between the
20 developing bias voltage and the potential of the
optical semiconductor larger than a difference
therebetween assumed when the toner is being
transferred onto the recording medium.

13. The image forming method according to
25 claim 12, wherein the magnetic particles are conveyed
by the optical semiconductor to the predetermined
collecting section.

TOP SECRET//COMINT